

CLIMATOLOGICAL DATA FOR SEPTEMBER, 1911.

DISTRICT No. 4, THE LAKE REGION.

Prof. HENRY J. COX, District Editor.

GENERAL SUMMARY.

The chief characteristics of the weather of September, 1911, in the Lake region were the rapidity in passage of storm areas across the district and the consequent sharp alternation of warm and cool periods, the remarkable frequency of precipitation throughout the entire month, and the extreme earliness of killing frosts and freezing temperatures over the eastern sections.

The storm movement, in its general features, was such as is experienced most frequently in the months of mid-winter. For the most part, areas of both high and low barometric pressure, to the number of about 17, held well to the northern limits of the upper lakes in their rapid sweep eastward, the former turning to the southeast across the Ontario peninsula and passing over the eastern highlands to the Atlantic coast, the latter traversing the St. Lawrence Valley to the ocean. As a result, the northwestern and extreme eastern sections suffered the severest weather of any throughout the district, while the south-central and southwestern portions were comparatively free from conditions of low temperature and occurrence of frost.

The amount of sunshine was quite deficient along the southwestern shore of Lake Michigan, but increased to about normal over the eastern portions of the Lake region, where the diurnal oscillation in temperature averaged greatest, owing to the influence of the passing high pressure areas, as referred to above. There was, in general, a larger number of rainy days than is usual for September. With a few exceptions, moreover, the month was free from destructive storms or extraordinary phenomena.

The following table summarizes the chief features of meteorological interest in the various portions of the district:

Portions of States lying within district No. 4.	Mean temperature		Mean precipitation		Greatest precipitation in 24 hours.	Number of days—	Prevailing wind direction.			
	Departure from normal.	Departure from normal.	Departure from normal.	Departure from normal.			With 0.01 inch or more.	Clear.	Partly cloudy.	
Minnesota.....	53.0	-2.2	4.03	+0.44	2.05	14	9	11	10	w.
Wisconsin.....	59.6	-0.7	5.14	+2.34	2.73	11	12	8	10	se.
Illinois.....	67.0	+2.4	4.03	+1.01	1.16	16	9	11	10	ne.
Indiana.....	65.5	+0.4	3.92	+0.99	1.80	12	12	6	12	de.
Upper Michigan.....	54.8	-0.8	2.77	-0.77	1.60	9	13	6	11	w.
Lower Michigan.....	61.1	-0.4	4.01	+1.32	2.26	10	12	7	11	sw.
Ohio.....	56.1	+1.2	3.97	+1.17	3.65	10	13	8	9	sw.
Pennsylvania.....	64.2	+0.3	4.14	+0.65	1.51	10	8	12	10	s.
New York.....	58.7	-1.5	3.42	+0.40	4.15	11	13	9	8	w.
Vermont.....	56.4	-1.8	3.53	+0.40	1.16	13	12	9	9	s.

TEMPERATURE.

Along the immediate shore of Lake Michigan from Green Bay southward, throughout the Indiana, Ohio, and Pennsylvania portions of the district, and at many stations in the southern counties of lower Michigan, the

mean temperature of the month was above the seasonal average, but the departures did not exceed 3° in any case, and generally were less than 2°. Elsewhere in the Lake region the mean monthly temperature was as a rule deficient, but did not fall below the normal by more than 3°, except at a few stations in the Lake Superior region and in the extreme northern portions of New York State and lower Michigan.

Four periods of warm and an equal number of cool weather passed across the district during the month, as a result of the rapid storm movement. Warm spells occupied the 1st-2d, 9th-11th, 15th-18th, and 22d-24th, and cool weather the remaining portions of the month. At no time, however, was the heat excessive for September, as indicated by the departures from the daily mean temperatures, these departures reaching in no instance +15°; yet practically all portions of the district except the extreme northern and eastern sections experienced maximum temperatures of more than 90°. Generally the highest temperatures occurred on either the 1st or 2d, but around the western end of Lake Superior and at some stations in the Michigan peninsulas the highest readings were not observed until the middle of the second decade.

As was the case with the maximum temperatures, the greatest cold of the month was not experienced over the western sections of the district until about two weeks after its occurrence to the south and east of Lakes Erie and Ontario. The cool spell of the 12th-14th was occasioned by an area of high barometric pressure which passed north of the upper lakes on the 12th and 13th. Curving in its path thence southeastward, it was central over New York State on the night of the 13th-14th and the accompanying clear skies and still cool air conducted to such rapid radiation as to lower the surface temperatures in many localities to the freezing point or below. Heavy and killing frosts occurred throughout the eastern sections in New York and Vermont, and much damage was done to exposed crops, such as corn, potatoes, and tomatoes. Although cool weather was general during this period, the western sections of the Lake region escaped destructive frosts because of the northerly path of the anticyclonic area and the closely following depression; but under the influence of high atmospheric pressures during the last few days of the month the minimum temperatures of the period were experienced, and heavy and killing frosts were general in the regions around Lake Superior.

The absolute range in temperature was 77°, from 97° on the 2d, at Port Austin, in lower Michigan, to 20° on the 28th, at Humboldt, in upper Michigan.

PRECIPITATION.

Over much of the sections lying immediately to the south of Lake Superior, the extreme northern counties of the lower peninsula of Michigan, and in general throughout

the Canadian Provinces of the Lake region, the precipitation of September, 1911, was somewhat deficient in amount; but over the remaining portions of the district the monthly amounts were greater than the normal, the excess ranging from +0.40 inch over the Champlain Valley to +2.34 inches over eastern Wisconsin, where the heaviest September rainfall of the past 10 years was experienced.

Precipitation was frequent in all portions of the district throughout the month, and the number of rainy days was considerably greater than the average for September. There were few sharp divisions in the times of occurrence of rainfall, but yet the rainy periods conformed roughly to the intervals during which cool weather was prevalent. Rain was especially frequent and heavy throughout the last week of the month, which was a persistently cold and disagreeable period, but heavy rains occurred in many localities on the 14th and 15th, and in the eastern sections on the 5th and 6th as well.

Snow squalls occurred on the 29th in portions of the Adirondack region and in Vermont, and a trace of snow was recorded at Stephens Mine, Minn.

SEVERE STORMS.

During the early morning hours of September 7 a severe squall swept the shore of Lake Michigan at Chicago, badly damaging a number of yachts and smaller craft that were anchored within the breakwater. The storm was quite local in character. An anemometer is maintained by the Weather Bureau at the Chicago Life-Saving Station, near the point where the greatest force of the squall was felt, and the register of the instrument showed a maximum wind velocity of 56 miles an hour at 1.45 a. m. At the Weather Bureau office in the city, however, barely 1½ miles distant, the maximum velocity was but 34 miles an hour, and occurred at 1.49 a. m. The course of the squall was such as to produce an on-shore wind at the time of greatest velocity, and to this fact much of the damage was evidently due.

Following the passage of a severe thunderstorm, between 8.30 and 9.30 o'clock on the night of September 11, accompanied by moderate fluctuations of barometric pressure, a pronounced seiche occurred along the southwestern shore of Lake Michigan. The water rose about 6 feet in the Jackson Park Harbor at Chicago, rushing in with great force, and tore many yachts from their moorings. The craft were crushed together in many instances by the swirl of the inrush, and either thrown upon the beach or drawn out into the lake as the waters receded. Nearly 160 yachts were anchored within the harbor at the time, and but few escaped damage of greater or lesser extent. The seiche was noticeable southward along the lake front and beyond the harbor at South Chicago, some damage occurring at that point. Northward from Jackson Park, however, there was no unusual movement of the lake's surface at any of the points of observation, so the phenomenon was evidently a direct result of the barometric fluctuations which accompanied the thunderstorm, as this storm passed south of the main portion of the city and apparently near the region of greatest disturbance of water level.

The rains in the eastern counties of Ohio on the 14th and 15th were unusually heavy, a number of stations in that region reporting 24-hour falls of between 3 and 4 inches. Referring to the situation, Mr. J. Warren Smith, section director at Columbus, says in his report:

The excessive rain caused the small streams in that part of the State to overflow and do much damage in the lowlands. A number of bridges were destroyed, corn and other late crops were washed away, and some stock drowned. Traffic on electric and steam railroads, as well as on public highways, was delayed by washouts and the destruction of bridges. At Akron the damage to one manufacturing company was estimated at \$12,000 and to a lumber company at \$3,000. The loss of crops along the many small streams will probably be much more than that.

The lightning that accompanied the rain storm of the 14th-15th was severe, but reports of damage by it have been received from only a few places in this district. In the vicinity of Ashtabula nearly a dozen buildings were struck, and in Summit County 5 barns were struck and destroyed.

A dam that was constructed to protect the Erie Railroad near Akron burst on the 16th, allowing a large volume of water to sweep down over the valley below. About 150 feet of the Erie roadbed and 200 feet of the Northern Ohio Traction Co.'s line were washed away and considerable damage was done to the farms that lay in the path of the flood.

Severe local storms occurred also at Medina, N. Y., on the 12th, and at Chicago, Ill., on the 18th, causing considerable damage to buildings and trees. Heavy squalls occurred in a few other localities over the district, with high-wind velocities, but no material damage has been reported. Thunderstorms were most numerous over the extreme southwestern sections of the Lake region, where an average number of 9 occurred during the course of the month. The northern and eastern sections were comparatively free from storms of this character, notwithstanding the frequency of showery conditions.

MISCELLANEOUS.

Fog.—As a rule, not much fog occurred in district No. 4 during September, 1911, except in the vicinity of western Lake Superior, in the interior of southern Michigan, and at the eastern end of Lake Ontario, where 5, 5, and 10 days with fog were noted, respectively.

On the evening of September 10 a very dense fog prevailed at Grand Rapids, Mich., extending westward nearly to the shore of the lake, and was the immediate cause of a wreck on an interurban railway, near Fruitport, which resulted in the injury of about 30 persons.

During a dense fog at Port Huron, Mich., on the 22d, the steamer *Phipps* collided with the steamer *Joliet*, while the latter was lying at anchor in the river, sinking her almost instantly. Before hauling up, the *Phipps* also collided with the steamer *Alpena*, damaging her bow to some extent.

Auroras were observed at Erie, Escanaba, and Sault Ste. Marie on the 19th, and at Canton and Northfield on the 26th. The former was reported from other localities as well, and was described as of unusual brilliancy.

ERRATUM.

In the last paragraph of the report for July, 1911, under the caption "Snow," the last sentence was omitted. The paragraph should be made to read:

Snow was reported to have fallen at Bay City, Mich., and at Grayling, Mich., on the 24th, the amount at the latter place being 1 inch or more. The report, although widely copied in the press, has no foundation in fact, as snowfall would have been impossible under the temperature conditions prevailing at the time.

SEPTEMBER, 1911, LAKE LEVELS.

The following data, from the report of the United States Lake Survey Office, relative to the water levels of the Great Lakes during the month, are reproduced here because of their value to various interests in the district:

Mean September level above tidewater at New York.

	Feet.
Lake Superior.....	602.20
Lakes Michigan-Huron.....	579.63
Lake Erie.....	571.53
Lake Ontario.....	244.91

Lake Superior is 0.05 foot higher than last month, 0.24 foot higher than a year ago, 0.69 foot below the average stage of September of the last 10 years, 1.88 feet below the high stage of September, 1869, and 0.71 foot above the low stage of September, 1879.

Lakes Michigan-Huron are 0.49 foot lower than last month, 0.62 foot

lower than a year ago, 1.35 feet below the average stage of September of the last 10 years, 3.80 feet below the high stage of September, 1876, and 0.12 foot below the low stage of September, 1896.

Lake Erie is 0.09 foot lower than last month, 0.49 foot lower than a year ago, 0.90 foot below the average stage of September of the last 10 years, 2.41 feet below the high stage of September, 1876, and 0.25 foot above the low stage of September, 1895.

Lake Ontario is 0.28 foot lower than last month, 0.79 foot lower than a year ago, 1.32 foot lower than the average stage of September of the last 10 years, 2.70 feet below the high stage of September, 1862, and 0.91 foot above the low stage of September, 1895.

TABLE 1.—Climatological data for September, 1911. District No. 4, Lake Region.

Stations.	Counties.	Elevation, feet.	Length of record, years	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmetted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
<i>Minnesota.</i>																					
Cloquet.	Carlton.	800	52.6	-	-	80	17	27	30	39	3.10	-	1.53	0	13	9	7	14	w.	S. B. Detwiler.	
Duluth.	St. Louis.	1,133	40	53.2	-3.5	77	22	35	30	32	3.35	-0.20	1.72	0	14	6	13	11	ne.	U. S. Weather Bureau.	
Floodwood.	do.	1,257	6								3.20		1.20	0	8	16	0	14	nw.	M. H. Schussler.	
Stephens Mine.	do.	1,500	4	51.8		80	16	27	12	42	4.13		1.34	T.	15	12	17	1	w.	Oliver Iron Mining Co.	
Two Harbors.	Lake.	614	17	54.6	-1.6	82	15	34	30	36	7.00	+ 2.52	2.05	0	14	5	15	10	ne.	G. W. Watts.	
Virginia.	St. Louis.	1,434	17	52.8	-1.6	80	16	29	12	37	3.41	-1.01	1.21	0	17	7	12	11	w.	Oliver Iron Mining Co.	
<i>Wisconsin.</i>																					
Appleton.	Outagamie.	795	10	61.3	-0.9	91	1	37	26	32	6.30	+ 3.58	2.21	0	12	18	5	7	se.	Wm. O. Thiede.	
Ashland.	Ashland.	647	20	56.1	-4.3	85	17	30	28	35	3.79	+ 0.66	1.48	0	12	16	5	9	ne.	Sam Wheeler.	
Bayfield.	Bayfield.	635	2	56.7		80	15	39	26	31	4.26		2.01	0	10	8	10	12	ne.	John P. Kiel.	
Cecil.	Shawano.	804	13	59.0	-0.4	86	17	31	26	42	5.50	+ 2.62	1.33	0	10	11	13	6	sw.	Louis W. Schmidt.	
Florence.	Fond du Lac.	1,293	20	55.2	-1.4	81	1	25	25	31	2.56	-0.71	0.54	0	7	15	4	11	n.	Fred S. Evans.	
Fond du Lac.	Fond du Lac.	800	25	61.2	0.0	92	1	32	26	43	3.26	+ 0.40	1.03	0	10	14	6	10	sw.	Geo. W. Marshall.	
Grand River Licks.	Marquette.	770	15	61.2		90	1	30	30	40	4.35	+ 0.49	1.35	0	11	18	6	6	s.	Jerry Parkinson.	
Green Bay.	Brown.	617	25	59.6	+ 0.5	88	1	38	26	29	5.16	+ 2.04	1.61	0	14	6	10	14	se.	U. S. Weather Bureau.	
Iron River.	Bayfield.	1,096	2	55.4		85	17	31	28	44	4.37		1.15	0	16	15	4	11	s.	Winfield E. Tripp.	
Keweenaw.	Keweenaw.	590	20	59.7		88	1	39	30	30	6.19		1.50	0	11	9	6	15	se.	Eugene V. Kimball.	
Manitowoc.	Manitowoc.	616	60	60.3	+ 0.5	82	1	39	26	25	5.78	+ 3.67	2.35	0	9	8	8	14	se.	Johanna Lups.	
Menasha.	Winnebago.	764	14								9.12	+ 6.05	2.73	0	9	18	2	10	se.	Geo. T. Allanson.	
Menomonee Falls.	Waukesha.	842	2	61.7		87	1	40	26	32	6.46		1.87	0	10	13 ^a	8 ^a	8 ^a	s.	Arthur H. Christman.	
Milwaukee.	Milwaukee.	681	40	63.4	+ 1.9	86	16	45	26	27	4.31	+ 1.39	1.15	0	15	11	8	11	ne.	U. S. Weather Bureau.	
New London.	Outagamie.	762	15	59.4	-1.2	89	1	33	30	33	6.24	+ 2.95	1.72	0	8	10	7	13	ne.	August H. Pape.	
Oconto.	Oconto.	590	20	59.24	-1.6	88	1	32	26	32	5.93	+ 2.93	1.50	0	12	11	15	4	se.	Wm. K. Smith.	
Oshkosh.	Winnebago.	744	22	61.0	-1.5	92	1	35	26	37	5.61	+ 2.94	1.25	0	10	17	6	7	se.	Evan Vincent.	
Pine River.	Waushara.	900	16	60.0	-1.1	89	1	34	30	33	6.20	+ 3.24	1.40	0	13	9	14	2	se.	Geo. H. Carpenter.	
Plum Island.	Door.	588	3	58.8		84	1	39	26	34	3.55		0.57	0	11	10	9	11	se.	Geo. C. Robinson.	
Plymouth.	Sheboygan.	843	1	60.6		88	1	39	26	28	5.33		1.25	0	14	11	9	10	s.	Paul O. Feldrappe.	
Port Washington.	Ozaukee.	713	18	62.4	+ 1.2	85	11	40	26	28	4.77	+ 1.76	1.10	0	13	12	5	13	se.	Richard C. Kann.	
Racine.	Racine.	633	14	64.4	+ 0.1	89	16	42	26	37	4.99	+ 1.36	1.28	0	10	17	2	11	se.	Daniel Davis.	
Ripon.	Fond du Lac.	935	1								3.32		1.48	0	9	13 ^a	5 ^a	11 ^a	sw.	Ripon College.	
Sheboygan.	Sheboygan.	831	12	62.0	0.0	83	1	40	26	27	5.83	+ 2.73	1.40	0	10	11	10	9	se.	Louis C. Meyer.	
Sturgeon Bay.	Door.	600	12	57.8	-2.0	87	1	33	26	35	5.10		0.89	0	14	11	11	8	se.	Adam N. Dier.	
Superior.	Douglas.	671	2	53.6		79	22	34	30	30	3.25		1.66	0	14	15	4	11	sw.	Edward B. Banks.	
Waupaca.	Waupaca.	857	16	59.0	-1.9	90	1	31	30	38	7.28	+ 4.03	1.38	0	14	10	10	10	se.	James H. Flagg.	
<i>Illinois.</i>																					
Chicago.	Cook.	824	41	67.0	+ 2.4	86	2	51	30	24	4.03	+ 1.01	1.16	0	16	9	11	10	ne.	U. S. Weather Bureau.	
Highland Park.	Lake.	691	1								3.82	+ 0.66	1.33	0	5						Jesse L. Smith.
<i>Indiana.</i>																					
Auburn.	DeKalb.	874	15	64.0	+ 1.3	91	2	40	30	40	3.05	+ 0.40	1.15	0	11	10	3	17	sw.	Mrs. Jessie B. Kuhlman.	
Berne.	Adams.	849	2	67.5		89	17	42	30	34	3.15		0.87	0	13	16	9	5	ne.	Henry M. Reusser.	
Ekhart.	Ekhart.	801	9																	Dr. Miles Medical Co.	
Ft. Wayne.	Allen.	775	15	66.4	+ 0.9	89	2	48	30	30	3.30	+ 0.09	1.20	0	12	9	8	13	sw.	U. S. Weather Bureau.	
Hammond.	Lake.	508	20	66.0	+ 0.4	94	1	38	30	39	5.97	+ 3.13	1.80	0	10	5	13	12	sw.	Carson W. Whitney.	
Howe.	Lagrange.	886	6	64.2		90	2	41	28	37	3.48		0.98	0	7	15	0	5	sw.	James E. Zook.	
South Bend.	St. Joseph.	756	18	64.7	-0.9	88	17	44	30	33	3.36	+ 0.33	0.80	0	18	15	1	14	se.	Henry H. Swalm.	
Whiting.	Lake.	606	2	65.6		82	11	49	22	25	5.10		1.09	0	13	12	7	11	ne.	D. H. Boyd.	
<i>Michigan—Upper Peninsula.</i>																					
Baraga.	Baraga.	622	9								1.90	-0.23	0.80	0	5	12	0	18	w.	D. S. S. & A. Ry.	
Bergland.	Ontonagon.	1,300	1	53.8		79	22	23	28	38	3.77		1.40	0	6	14	13	3	s.	Frank McMonigal.	
Blaney.	Schoeler.		4																		
Calumet.	Houghton.	1,246	23	52.8	-2.6	79	22	32	28	30	3.36	-0.43	1.16	0	11	21	4	5	w.	E. S. Grierson.	
Chatham.	Alger.	875	10	52.6	-2.4	83	1	21	28	38	2.82	-1.19	0.93	0	12	13	7	10	n.	U. P. Experiment Sta.	
Deer Park.	Luce.	610	15	56.0	-0.3	82	5†	30	28	37	1.85	-1.04	1.60	0	3	16	2	12	s.	Mrs. Sara E. McGaw.	
Detour.	Chippewa.	585	10	56.8		83	1	32	28	32	2.65		1.30	0	5	20	2	8	sw.	Linton Melvin.	
Eagle Harbor.	Keweenaw.	622	14	54.2	-1.8	80	22	31	28	30	2.78	-0.63	1.30	0	10	15	5	11	s.	John Nolen.	
Escanaba.	Delta.	612	38	56.0	-0.9	80	15	33	28	27	3.78	+ 0.20	1.08	0	13	10	9	11	s.	U. S. Weather Bureau.	
Ewen.	Ontonagon.	1,147	10	51.7	-3.3	81	17	20	28	35	3.47	+ 0.64	1.30	0	10	12	0	18	sw.	W. B. Hatfield.	
Grand Marais.	Alger.	610	10								3.34		1.19	0	4	14	6	10		T. A. Green.	
Green O.	Ontonagon.	622	0								2.61	-0.93	0.87	0	12	11	6	13		U. S. Weather Bureau.	
Houghton.	Houghton.	668	10	54.4	-2.3	82	22	32	28	32	2.61	-0.93	0.87	0	13	12	0	17		D. S. S. & A. Ry.	
Humboldt.	Marquette.	1,536	14	53.7	+ 0.5	79	1	20	28	43	1.28	-2.30	0.52	0	3	12	0	17		Chapin Mining Co.	
Iron Mountain.	Dickinson.	1,111	10	57.4	+ 1.1	87	29	29	28	41	2.31	-0.53	0.52	0	9	15	5	20	sw.	Victor D. Laing.	
Iron River.	Iron.	1,504	14	53.2	-1.3	80	17	23	28	41	3.80	+ 0.02	0.70	0	11	15	5	10	sw.	J. V. Brennan.	
Ironwood.	Gogebic.	1,520	8	55.2	+ 1.3	86	17	30	28	29	2.78	-0.77	1.52	0	10	10	3	11	s.	Cleveland Cliffs Iron Co.	
Ishpeming.	Marquette.	1,536	11	53.6	-1.7	78	1	25	28	32	3.25	-0.34	0.60	0	13	9	13	12 ^a	n.	J. A. Malone.	
Isle Royale.	Keweenaw.	610	4																		

TABLE 1.—*Climatological data for September, 1911. District No. 4—Continued.*

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeted.	Number of rainy days, 0.01 inch or more.	Number of partly cloudy days.	Number of clear days.			
<i>Michigan—Lower Peninsula—Continued.</i>																				
Ann Arbor	Washtenaw	930	31	63.8	+ 1.0	92	2	41	14	32	3.95	+ 1.32	1.46	0	14	16	7	13	nw.	University of Michigan.
Ariola	Tuscola	728	15	61.0	- 1.7	88	2	35	28	35	4.75	+ 1.95	1.47	0	12	4	11	15	sw.	Wm. Atkin.
Battle Creek	Calhoun	822	27	63.4	- 0.4	89	1	41	28	35	4.46	+ 1.71	1.48	0	11	13	5	12	nw.	Elmer E. Sager.
Bay City	Bay	593	15	61.6	- 0.3	91	1	39	30	40	7.85	+ 4.32	1.50	0	16	13	8	9	nw.	Pere Marquette R. R.
Benzonia	Benzie	832	15																nw.	Martin S. Joiner.
Berlin	St. Clair	22	61.8	0.0	91	1	34	14	39	5.20	+ 2.35	2.26	0	14	6	14	10	nw.	R. O. Gould.	
Big Rapids	Mecosta	906	15	58.6	- 1.0	88	1	33	28	41	4.70	+ 1.55	1.18	0	15	13	8	9	w.	Charlie Gay.
Bloomingdale	Van Buren	7	63.3					88	1	42	28	31	4.49		1.00	0	10	15	nw.	John M. Haven.
Cadillac	Wexford	1,293	2	58.9 ^a		83 ^a	1	31 ^a	26	31 ^a	3.33 ^a		0.88 ^a		0	9 ^a	14 ^a	3 ^a	n.	Cadillac W. & L. Co.
Cassopolis	Cass	903	10																nw.	Michigan Central R. R.
Charlevoix	Charlevoix	610	33	57.6	- 3.1	84	1	35	27 ^f	34	3.21	- 0.13	0.76	0	8	14	5	11	nw.	Pere Marquette R. R.
Charlotte	Eaton	7	63.2			89	2	34	24	46	5.72		1.20	0	9	11	1	18	s.	City of Charlotte.
Cheboygan	Cheboygan	611	21	56.6	- 3.3	85	1	28	28	36	1.70	- 1.19	0.70	0	4	9	12	9	s.	E. A. Bouchard.
Clinton	Lenawee	830	21	65.4	+ 1.7	91	2	41	14	40	4.02	+ 1.43	1.60	0	7	13	8	9	sw.	David Woodward.
Concord	Jackson	984	14	65.6	+ 1.3	89	1	20	23	37	3.73	+ 0.62	0.70	0	10	16	5	0	s.	L. S. & M. S. R. R.
Croton	Newaygo	685	3	61.6		88	1 ^f	42	20 ^f	34	4.54		1.95	0	10	11	16	3	sw.	W. N. Armstrong.
Detroit	Wayne	730	40	64.2	+ 1.1	89	2	44	28	28	4.32	+ 1.84	1.59	0	14	12	6	12	n.	G. R. M. P. Co.
Durand	Shiawassee	799	4	62.8 ^d		85 ^d	5	40	12	42	4.95	+ 1.67	2.00	0	16	17	0	11	w.	U. S. Weather Bureau.
East Tawas	Iosco	590	14	58.1	- 2.3	87	1	36	28	35	2.93	+ 0.78	0.60	0	10	17	3	10	sw.	H. J. Tobin.
Eloise	Wayne	640	14	64.6	+ 0.4	92	2	38	14	34	5.20	+ 2.68	1.70	0	13	14	5	11	s.	D. & M. R. R.
Flint	Genesee	730	22	60.8	- 0.7	84	1	39	28	31	4.00	+ 1.43	1.12	0	13	9	6	15	w.	John Gilmore.
Frankfort	Benzie	589	7	59.0		79	17	40	29	25	3.87		1.20	0	9	15	0	15	s.	William L. Fisher.
Ganges	Allegan	665	2	62.2		84	1	42	26	31	5.29		1.32	0	13	12	5	13	sw.	Geo. Morensey.
Gaylord	Otsego	1,367	11	56.2	- 0.4	79	1	37	21	27	3.04	- 0.15	0.90	0	11	0	19	19	s.	H. H. Hutchins.
Gladwin	Gladwin	794	15	59.0	- 0.2	92	1	33	27	44	7.25	+ 4.55	1.60	0	8	17	2	11	sw.	Michigan Central R. R.
Grand Haven	Ottawa	628	30	60.4	- 0.7	84	17	40	28	32	5.88	+ 2.71	1.77	0	12	12	9	9	e.	Geo. R. Smith.
Grand Rapids	Kent	707	22	62.4	+ 0.6	89	1	40	28	31	7.58	+ 4.46	1.80	0	11	10	8	12	se.	U. S. Weather Bureau.
Grape	Monroe	625	21	64.8	+ 0.5	91	2	40	14	33	4.33	+ 1.35	1.56	0	10	13	6	11	sw.	Do.
Grass Lake	Jackson	989	5	63.8		91	2	40	28	34	2.68		1.20	0	7	12	1	17	w.	Joseph W. Morris.
Grayling	Crawford	1,147	21	57.3	- 1.2	87	2	26	28	30	5.00	+ 0.41	0.83	0	14	14	4	12	ne.	Menzo Conklin.
Harbor Beach	Huron	635	23	58.8	- 2.4	90	1	30	14	40	2.10	- 0.13	0.30	0	10	16	5	9	e.	S. N. Insley.
Harrison	Clare	1,159	18																nw.	Pere Marquette R. R.
Harrisville	Alcona	616	27	58.6	- 0.8	92	1	28	4 ^f	58				0	17	5	8	sw.	D. W. Mitchell.	
Hart	Oceana	698	19					88	15	20	6.22	+ 3.33	1.82	0	7	5	22	3	sw.	Pere Marquette R. R.
Ifaves	Huron	620	21	59.3	- 2.3	83	16	40	13 ^f	33	4.38	+ 1.83	1.00	0	11	11	10	9	ne.	C. F. Leipbrandt.
Highland	Oakland	830	19								5.33	+ 2.52	1.65	0	9				n.	A. D. De Garmo.
Hillsdale	Hillsdale	1,150	14	64.0	+ 0.9	88	2	42	20	35	4.25	+ 1.67	0.71	0	10	15 ^b	28	11 ^b	nw.	C. L. Herron.
Holland	Ottawa	610	5	62.2		86	17	41	26	36	5.47		1.53	0	12	12	6	6	nw.	City of Holland.
Howell	Livingston	924	19	61.8	- 1.0	88	1 ^f	40	26	32	4.30	+ 2.26	1.45	0	13	5	12	se.	Frank Sharp.	
Ivan	Kalkaska	22	57.1	- 2.2	87	1	28	28	41	3.04	- 0.15	0.90	0	11	10	13	7	nw.	O. L. Giddings.	
Jackson	Jackson	927	14	64.1	- 0.6	90	1 ^f	40	28	46	4.69	+ 1.88	1.35	0	11	11	9	10	nw.	City of Jackson.
Jeddo	St. Clair	667	22	61.7	- 0.4	89	1	33	14	30	3.29	+ 0.62	0.84	0	11	8	11	11	ne.	William Bice.
Kalamazoo	Kalamazoo	955	35	64.6	+ 1.5	90	1	42	28	34	3.62	+ 0.54	0.95	0	10	10	12	8	w.	Kalamazoo Asylum.
Lansing (Agr. Col.)	Ingham	820	47	61.5	+ 0.3	89	1	38	28	35	5.05	+ 2.38	1.46	0	13	11	8	11	se.	U. S. Weather Bureau.
Lansing (Capitol)	do	881	24	62.8	+ 0.9	90	1	35	28	34	6.22	+ 3.48	2.20	0	11	8	5	17	n.	State board of health.
Lapeer	Lapeer	827	12	63.8	+ 1.9	90	1	39	12 ^f	34	3.49	+ 0.07	0.80	0	9	7	14	9	sw.	Michigan Home.
Ludington	Mason	586	13	58.6	- 3.0	78	1 ^f	32	28	36	3.65	+ 1.43	1.10	0	5	20	7	3	sw.	Pere Marquette R. R.
Luther	Lake	1,028	1	58.2		88	1	29	28	40	4.32		1.51	0	14	14	7	9	sw.	John W. Nichoson.
Mackinaw	Cheboygan	592	20	57.2	- 0.9	78	11	35	27	28	1.75	- 1.74	0.45	0	7	10	11	5	nw.	G. R. & I. Ry.
Mancelona	Antrim	1,121	15	57.2	- 0.9	86	1	29	26	34	2.63	- 0.59	1.10	0	10	18	5	7	e.	Pere Marquette R. R.
Manistee	Manistee	600	14	60.5	+ 0.4	84	1	32	29	36	1.70	- 0.77	0.65	0	6	19	8	3	nw.	Do.
Marshall	Calhoun	896	0																nw.	Pere Marquette R. R.
Midland	Midland	604	12					33	28		1.71	- 0.53	1.00	0	5	10	8	12	se.	E. B. Stuart.
Morenci	Lenawee	811	4	65.2		89	1 ^f	43	14	35	3.83		0.93	0	10	15	1	14	sw.	Pere Marquette R. R.
Mount Clemens	Macomb	615	11	60.8	+ 1.7	94	2	28	14	46	5.55	+ 2.49	1.68	0	9	11	10	9	se.	George J. Tripp.
Mount Pleasant	Isabella	826	12	63.0	+ 1.9	95	2	34	28	45	4.07	- 1.35	0.23	0	8	14	4	12	sw.	Waterworks.
Muskegon	Muskegon	597	15	61.2	- 0.8	85	1	39	28	31	0.93	- 2.52	0.30	0	7	16	1	13	w.	Pere Marquette R. R.
Old Mission	Grand Traverse	853	17	58.8	- 2.2	83	1	37	28	31	3.39	+ 0.20	0.75	0	11	7	17	6	n.	G. R. & I. Ry.
Olivet	Eaton	934	21	61.6	+ 0.1	83	1 ^f	44	30	29	5.62	+ 2.20	1.61	0	13	16	1	13	sw.	E. O. Ladd.
Omer	Arenac	616	12	60.6	+ 0.8	89	5	34	20 ^f	51	3.30	+ 1.88	0.80	0	8	6	11	13	s.	G. A. Knapp.
Onaway	Presque Isle	826	8	58.0	- 0.2	84	1	23	26	40*	1.90	- 0.60	0.70	0	4	16	1	13	w.	D. & M. Ry.
Owosso	Shiawassee</td																			

TABLE 1.—Climatological data for September, 1911. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Sky.	Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	
Ohio—Continued.																			
Defiance.	712	17	66.0	+ 0.8	91	2	42	20†	37	3.19	+ 0.22	0.80	0	9	12	2	16	ne.	
Findlay.	776	22	67.1	+ 1.2	91	2	43	14	38	2.60	- 0.24	0.91	0	11	16	6	8	se.	
Fremont.	628	9	66.9	.....	90	1†	43	14	34	2.85	.....	0.83	0	10	15	6	9	sw.	
Hedges.	725	17	66.6	+ 0.9	90	2	42	23†	41	3.18	+ 0.87	0.90	0	8	16	8	6	sw.	
Hillhouse.	997	18	63.9	+ 0.5	87	2	39	13†	34	6.80	+ 3.04	3.65	0	13	11	15	4	sw.	
Hiram.	1,260	31	65.4	+ 2.1	85	2	40	14	25	5.29	+ 2.00	1.74	0	9	11	12	7	.....
Hudson.	1,153	50	64.8	+ 0.8	89	2	36	14	35	6.27	+ 2.02	2.80	0	7	17	6	7	s.	
Lima.	875	12	66.3	+ 1.1	86	2	48	14	27	4.13	+ 1.79	1.15	0	8	15	7	8	w.	
Medina.	944	23	66.2	+ 1.0	88	1	37	14	39	5.22	+ 2.51	3.47	0	6	16	7	7	se.	
Montpelier.	880	19	66.6	+ 2.8	91	2	44	14	35	2.84	+ 0.14	0.67	0	8	16	3	11	nw.	
Napoleon.	680	24	66.4 ^a	+ 1.1	90 ^b	2	45	14	34	2.85	+ 0.22	0.62	0	12	15	4	11	e.	
New Bremen.	1,038	18	67.7	+ 1.0	88	2†	45	30	37	4.14	+ 1.48	0.98	0	7	11	14	5	sw.	
Auglaize.	Defiance.	712	17	66.0	+ 0.8	91	2	42	20†	37	3.19	+ 0.22	0.80	0	9	12	2	16	ne.
North Royalton.	Hancock.	776	22	67.1	+ 1.2	91	2	43	14	38	2.60	- 0.24	0.91	0	11	16	6	8	se.
Norwalk.	Summit.	1,153	50	64.8	+ 0.8	89	2	36	14	35	6.27	+ 2.02	2.80	0	7	17	6	7	.....
Putnam.	855	12	66.4	+ 1.3	86	2	48	14	27	4.13	+ 1.79	1.15	0	8	15	7	8	w.	
Sandusky.	Erie.	720	16	66.0	+ 0.7	88	2	45	14	39	5.22	+ 2.51	3.47	0	6	16	7	7	se.
Tiffin.	629	34	66.5	+ 1.2	90	2	47	14	27	3.53	+ 0.85	1.64	0	12	14	9	7	ne.	
Seneca.	775	29	66.0	+ 1.0	87	2	46	14	25	2.33	- 0.24	0.74	0	11	14	9	7	n.	
Toledo.	709	40	66.0	+ 1.9	89	2	48	25	35	2.55	+ 0.89	1.09	0	13	12	9	9	nw.	
Wyandot.	Lucas.	854	28	66.8	+ 1.0	87	2	45	14	33	3.97	+ 1.48	0.86	0	12	10	6	14	nw.
Sandusky.	Fulton.	588	18	66.7	+ 1.2	92	2	42	14	40	2.30	- 0.04	0.73	0	9	11	8	11	sw.
Wauseon.	Lake.	780	39	65.1 ^b	+ 1.5	93 ^b	2	42 ^b	14	35	3.51	+ 1.23	0.97	0	14	8	16	6	s.
Willoughby.	649	17	.....	.....	.....	.....	.....	.....	.....	6.01	+ 3.03	3.20	0	11	14	7	9	ne.	
Pennsylvania.																			
Erie.	Erie.	658	38	64.2	+ 0.3	87	2	42	14	27	4.14	+ 0.65	1.51	0	10	8	12	10	s.
New York.																			
Adams Center.	Jefferson.	540	20	59.1	- 2.0	78	2	34	28	26	4.24	+ 0.77	2.55	0	10	9	16	5	s.
Angelica.	Allegany.	1,340	28	58.8	- 0.1	84	2	29	14	37	3.25	+ 0.28	0.71	0	16	0	15	15	w.
Appleton.	Niagara.	270	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Auburn.	Cayuga.	715	42	60.8	- 0.2	86	2	35	14	34	3.83	+ 0.78	1.42	0	9	15	11	4	s.
Avon.	Livingston.	585	16	61.0	- 0.9	85	2	34	4	35	3.19	+ 0.53	0.78	0	11	7	17	6	.....
Blue Mountain Lake.	Hamilton.	1,750	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brockport.	Monroe.	537	15	61.4	- 1.8	86	2	32	14	30	2.69	+ 0.09	0.93	0	15	15	9	6	.....
Buffalo.	Erie.	767	60	62.2	- 0.7	82	18	41	28	27	3.81	+ 0.63	1.07	0	11	11	11	8	sw.
Canton.	St. Lawrence.	448	17	55.9	- 3.4	80	5	29	28	35	4.50	+ 1.69	2.72	0	10	10	10	10	sw.
Cape Vincent.	Jefferson.	246	6	58.8	.....	79	6	35	14	23	3.33	.....	1.50	0	9	11	13	6	s.
Carvers Falls.	Washington.	243	13	57.0	- 3.0	84	2	30	14	31	3.61	- 0.02	0.88	0	9	18	5	7	s.
Chazy.	Clinton.	151	11	58.4	- 1.2	82	2	32	28	34	4.16	+ 1.19	1.18	0	6	12	10	8	s.
Dannemora.	Genesee.	1,490	6	57.2	.....	80	2	30	28	30	4.14	.....	1.76	T.	13	12	7	11	w.
Elba.	Franklin.	500	12	59.2	- 3.5	80	2	31	14	32	1.91	- 0.65	1.11	T.	0	6	19	5	6
Faust.	Onondaga.	1,550	10	62.8	- 0.7	87	2†	34	28	35	2.93	+ 0.48	1.69	0	10	15	5	10	nw.
Fayetteville.	Franklin.	1,729	9	54.0	.....	84	24	25	14	50	3.35	.....	1.46	T.	14	15	6	9	w.
Gahriels.	Herkimer.	622	9	56.5	- 2.8	84	2	30	14	33	2.75	+ 0.02	1.01	0	13	21	4	5	w.
Harkness.	Clinton.	900	13	61.4	- 1.4	83	2	37	14	27	3.42	+ 2.1	0.89	0	7	15	7	8	s.
Hemlock Lake.	Livingston.	1,321	12	61.4	- 1.2	86	2	31	14	31	3.27	+ 0.81	1.03	0	8	9	16	5	sw.
Hunt.	Tompkins.	928	33	60.4	- 0.2	85	2	30	14	33	2.78	- 0.05	0.84	0	13	16	3	11	nw.
Ithaca.	Essex.	1,000	13	58.0	- 0.7	90	23	25	14	52	3.41	- 0.05	1.92	0	12	16	7	7	s.
Keene Valley.	Cayuga.	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kine Ferry.	Warren.	350	14	59.8	- 0.8	86	2	33	14†	38	4.32	+ 0.70	0.96	0	12	11	14	5	s.
Lake George.	Essex.	1,864	3	51.6	.....	73	2	23	14†	35	2.29	.....	0.32	0.5	13	13	12	5	nw.
Lake Placid Club.	Genesee.	920	21	61.0	- 0.2	84	2	34	14	32	3.49	+ 1.39	2.03	0	10	11	6	13	w.
Le Roy.	Niagara.	650	24	60.9 ^a	- 1.5	82	1†	35	14	33	2.00	- 0.81	0.49	0	11	7	17	5	w.
Lockport.	Lewis.	900	44	56.4	- 1.4	86	2	29	14	39	2.16	- 0.91	0.87	0	10	17	7	6	w.
Moir.	Franklin.	200	11	56.6	- 4.4	80	5	29	28	41	3.25	- 0.13	1.41	0	10	17	7	6	s.
Nehasane.	Hamilton.	1,750	3	53.3	.....	78	2	22	14	37	3.78	.....	1.06	T.	16	14	9	7	sw.
North Lake.	Herkimer.	1,822	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ogdensburg.	St. Lawrence.	175	27	58.8	- 2.8	80	2	30	14	34	2.80	+ 0.05	1.30	0	8	10	19	1	se.
Old Forge.	Franklin.	1,733	3	54.1	.....	77	2†	35	14	34	3.76	.....	1.26	0	16	15	4	11	s.
Oswego.	Cattaraugus.	335	41	59.8	- 2.9	82	2	39	14	38	3.03	+ 0.22	2.17	0	12	16	4	10	s.
Otto.	Franklin.	1,410	7	61.6	.....	81	2	36	14	32	4.54	.....	0.96	0	14	11	14	5	e.
Palermo.	Oswego.	460	52	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Perry City.	Schuyler.	1,038	31	57.4	- 2.3	87	2	26	14	30	4.00	+ 1.26	0.91	0	12	9	10	11	nw.
Philadelphia.	Jefferson.	485	5	58.8	.....	79	2†	31	28	31	6.06	.....	4.15	0	10	15	5	5	w.
Potsdam.	St. Lawrence.	300	35	58.8	- 1.0	84	6†	30	28	35	4.44	+ 1.36	2.15	0	13	13	6	11	w.
Raquette Lake.	Hamilton.	3	55.4	.....	75	5	28	28	37	4.74	.....	1.26	0	14	11	7	12	w.	
Rochester.	Monroe.	523	82	61.4	- 0.5	84	2	37	14	32	3.56	+ 1.24	2.12	0	13	13	6	11	w.
Romulus.	Seneca.	719	19	62.2	- 0.8	86	2	37	14	35	3.07	+ 0.49	0.78	0	9	12	7	11	nw.
Shortsville.	Ontario.	740	12	61.4	- 2.0	84	2	37	14	30	3.57	+ 1.41	1.05	0	12	16	10	4	ne.
Skaneateles.	Onondaga.	16	.....	.....	.....											

TABLE 2.—*Daily precipitation for September, 1911. District No. 4, Lake Region.*

TABLE 2.—*Daily precipitation for September, 1911. District No. 4—Continued.*

TABLE 2.—*Daily precipitation for September, 1911. District No. 4—Continued.*

Stations.	Watershed.	Day of month.																													Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
<i>Ohio—Continued.</i>																															
North Royalton	Erie	.02	.50	.24	.03	.12	.12	.31	.04	T.	T.	.08	.05	.25	.70	.07	5.99														
Norwalk |||	do	.05	.30	.01	.19	.19	.19	.40	1.10	.22	T.	T.	.04	.08	.14	.50	.50	2.11													
Oberlin	do	.06	.30	.01	.19	.19	.19	.40	1.10	.22	T.	T.	.04	.08	.14	.50	.60	4.26													
Ottawa	Maumee	.44	.01	T.	T.	.40	1.10	.08	T.	T.	.02	.04	.04	.08	.06	.02	3.00														
Sandusky	Erie	.14	.29	.01	.13	.02	1.35	.29	T.	T.	.02	.07	1.05	.01	.15	.33	.53	3.53													
Tiffin	Sandusky	.74	.03	T.	.13	.19	.05	.38	T.	.09	.05	.01	T.	.46	.20	.20	.33	3.33													
Toledo	Maumee	.35	T.	.02	T.	.16	.01	T.	.78	.31	.34	.02	.25	.03	.74	.01	.23	3.25													
Upper Sandusky	Sandusky	.86	.05	.42	.05	.11	.05	.15	.70	.38	.15	.07	.80	.25	.25	.04	.97	3.97													
Vickery	Erie	.64	.01	T.	T.	.18	.42	T.	.13	.10	.12	.61	.09	.09	.21	.38	2.30														
Wauseon |||	Maumee	.35	.01	T.	.02	.36	.02	T.	.67	.26	.71	.28	.04	.04	.01	.83	.21	3.81													
Willoughby |||	Erie	.21	.44	.32	.03	.03	T.	.30	.10	.08	.06	.71	.06	.71	.83	.06	6.00														
<i>Pennsylvania.</i>																															
Erie	Lake	.09	.81	T.	T.	.09	.43	1.08	T.	.21	.22	T.	.24	.20	.78	.78	4.14														
<i>New York.</i>																															
Adams Center	Lake Ontario	.08	.02	2.55	.03	T.	.03	.64	.05	T.	.12	.58	T.	.14	.24																
Altmar	do	.04	.02	.22	.71	.09	.16	.45	.29	.15	.01	T.	.13	.41	.02	.02	.43	.04	3.25												
Angelica	Genesee	.04	.22	.71	.09	.16	.45	.29	T.	.15	.01	T.	.13	.41	.02	.02	.43	.04	3.25												
Appleton	Lake Ontario	.15	.33	.20	1.42	.08	T.	.70	T.	.10	.15	T.	.22	.58	T.	.33	.83														
Auburn	Oswego	.50	.30	.78	.20	T.	.45	.27	.31	.67	.17	T.	.23	.50	T.	.31	.93														
Avon	Genesee	.50	.30	.78	.20	T.	.45	.27	.31	.67	.17	T.	.23	.50	T.	.31	.93														
Blue Mountain Lake	Raquette	.15	.33	.20	1.42	.08	T.	.70	T.	.10	.15	T.	.22	.58	T.	.33	.83														
Boonville	Black	T.	.01	.32	.93	.09	.03	.25	T.	.04	.16	.04	T.	.06	.07	.23	.43	.02	2.69												
Brockport	Lake Ontario	T.	.01	.32	.93	.09	.03	.25	T.	.04	.16	.04	T.	.06	.07	.23	.43	.02	2.69												
Buffalo	Lake Erie	T.	1.00	.07	.37	T.	.53	T.	.01	.16	.44	.10	T.	.02	.07	T.	1.02	T.	3.81												
Canton	Grass	.07	1.28	1.44	.02	T.	.58	.15	.12	T.	.24	T.	.03	.05	T.	.11	.50	T.	.11	4.50											
Cape Vincent	St. Lawrence	.15	1.50	.10	.40	.20	.20	T.	.66	.25	.03	.06	.13	T.	.35	.40	.61	T.	.26	4.93											
Carvers Falls	Lake Champlain	* do	.54	.18	.12	.19	.18	.85	.88	T.	.10	.85	T.	.50	.46	.16															
Chazy	do	.04	.02	1.18	.45	.06	.35	.65	.02	T.	.07	.56	T.	.01	.13	.29	.03	4.14													
Dannemora	Faust	.04	.02	1.76	.45	.06	.35	.65	.02	T.	.07	.56	T.	.01	.13	.29	.03	4.14													
Elba	Raquette	.23	.88	T.	.45	T.	.45	T.	.07	T.	.07	.56	T.	.10	.18	.50	.50	T.	.10	1.91											
Fayetteville	Oswego	.06	.13	1.69	.12	.22	.04	T.	.07	T.	.07	.56	T.	.02	.07	.26	.04	.05	3.55												
Gabriels	St. Regis	.07	.02	.01	1.46	.11	.50	.10	.07	T.	.03	.77	T.	.02	.07	.26	.04	.05	3.55												
Harkness	Lake Champlain	* do	1.01	.06	.09	.09	.09	.20	.12	T.	.11	.03	T.	.03	.04	.02	.10	.20	.01	2.75											
Hemlock Lake	Genesee	* do	.89	.66	.20	.58	T.	.18	T.	.31	T.	.31	T.	.31	.27	.42															
Hooker	Lake Ontario	.12	1.03	.73	.22	.23	.07	T.	.20	T.	.31	T.	.31	.27	T.	.31	.56														
Horseshoe	St. Lawrence	.05	.03	.08	1.92	.03	.15	.21	.41	T.	.10	.05	T.	.29	.41	.41	.56														
Ithaca	Oswego	.17	T.	.27	.57	T.	.28	.29	.28	T.	.10	.05	T.	.29	.41	.41	.56														
Keene Valley	Ausable	.05	.03	.08	1.92	.03	.15	.21	.41	T.	.10	.05	T.	.29	.41	.41	.56														
King Ferry	Oswego	.14	.52	.96	T.	.31	.53	.32	.53	T.	.13	.10	T.	.32	.41	.41	.55														
Lake George	Lake Champlain	.03	.82	.96	T.	.31	.53	.32	.53	T.	.06	.25	T.	.07	.05	.39	.42														
Lake Placid Club	Ausable, W. Br	.08	.28	.32	.08	T.	.15	.22	.25	T.	.05	.25	T.	.05	.25	.32	.32														
Leisers Mill	Black	T.	.04	.50	2.03	T.	.41	T.	.42	T.	.15	T.	.06	.09	.66	4.39															
Le Roy	Genesee	.04	.50	2.03	T.	.41	T.	.42	T.	.15	T.	.06	.09	.66	4.39																
Lockport	Lake Ontario	.01	.09	.23	T.	T.	.49	.11	T.	.10	.30	T.	.04	.18	.39	.00	2.00														
Lowville	Black	.20	.10	.87	T.	T.	.64	.10	T.	.15	T.	.15	T.	.10	.15	.21	.21														
Moira	St. Lawrence	.14	.41	.07	.07	.03	.50	.35	T.	.12	.26	T.	.35	.30	.02	.08	3.25														
Nehasane	Black	.08	.14	.13	.03	.03	.23	.72	T.	.62	T.	.12	.04	.19	.03	.17	.02	3.78													
North Lake	do	T.	.03	.03	T.	.03	.23	.72	T.	.62	T.	.12	.04	.19	.03	.17	.02	3.78													
North Osecola	Lake Ontario	T.	.11	T.	1.30	.04	T.	.53	T.	.10	.32	T.	.45	T.	.02	.10	2.80														
Ogdensburg	St. Lawrence	.08	.10	.11	.03	.26	.20	.37	.25	T.	.01	.25	T.	.23	.03	.15	.02	2.76													
Old Forge	Black	.01	L. 34	.83	.01	.02	.03	T.	.22	T.	.05	T.	.07	.19	T.	.03	.03	3.03													
Oswego	Lake Ontario	.11	.40	.40	.00	.06	.02	T.	.42	T.	.13	T.	.05	.05	T.	.49	.54														
Otto	Lake Erie	.30	.26	.01	.06	.10	.05	.06	.10	T.	.06	T.	.03	.03	T.	.03	.03	2.80													
Palermo	Lake Ontario	.26	.09	.91	.75	.25	T.	.43	.25	T.	.12	.26	T.	.27	T.	.35	.06	4.00													
Perry City	Oswego	.26	.09	.91	.75	.25	T.	.43	.25	T.	.09	.46	T.	.05	.16	.06	.06	6.06													
Philadelphia	St. Lawrence	.13	.25	.16	.02	.03	.77	.94	T.	.17	.10	T.	.25	.44	.11	.10	.11	4.44													
Potsdam	Raquette	.25	.08	.05	1.26	.10	.16	.40	.65	T.	.05	.03	T.	.11	.10	.35	.47	4.74													
Raquette Lake	do	.02	2.11	.01	.23	T.	.02	T.	.28	T.	.05	.03	T.	.01	.16	.43	.56														
Rochester	Genesee	.18	.06	.03	.31	.33	.17	T.	.05	T.	.08	T.	.08	.78	T.	.20	2.07														
Romulus	Oswego	.05	.05	.30	T.	.17	.11	.54	.04	T.	.05	.15	T.	.11	.10	.40	.16	3.73													
Scottsville	do	.05	.05	.37	.37	.34	.12	T.	.34	T.	.03	.06	T.	.05	.15	.65	T.	.11	3.53												
Shortsville	do	.08	.40	.37	.10	.05	.07	.34	.12	T.	.34	.03	T.	.03	.06	.65	T.	.11	3.53												
Skaneateles	do	T.	.12	.05	.30	T.	.17	.11	.54	T.	.04	T.	.05	.15	T.	.11	.10	3.73													
Syracuse	do	.11	.14	.07	.36	1.10	.08	.25	.01	T.	.13	T.	.02	.05	T.	.11	.10	3.76													
Ticonderoga	L. Champlain	.06	.12	.18	.45	.55	.04	.06	.36	T.	.25	T.	.16	.19	T.	.25	.49	2.49													
Tupper Lake	Raquette	.06	.12	.18	.45	.55	.04	.06	.36	T.	.25	T.	.16	.19	T.	.25	.49	2.49													
Watervliet	Lake Erie	.15	.11	.11	.06	.36	.28	.36	.30	T.	.25	T.	.16	.19	T.	.25	.49	2.49													
Wanakena	Oswegatchie	T.	.15	.11	.06	.36	.28	.36	.30	T.	.25	T.	.16	.19	T.	.25	.49	2.49													
Wards Creek	Raquette	.15	.02	.04	.57	.72	.01	.15	.52	.04	.20	.18	.13	.08	.25	.08	.02	.35	.06	4.84											
Watertown	Black	.15	.02	.04	.57	.72	.01	.15	.52	.04	.20	.18	.13	.08	.25	.08	.02	.35	.06	4.84											
Wedgewood	Oswego	.10	.15	.15	.72	.72	.01	.15	.52	.04	.20	.18	.13	.08	.25	.08	.02	.35	.06	4.84											
Westfield	Lake Erie	.21	.31	.10	.03	.31	.10	.08	.25	.01	.29	.31	.29	.17	.31	.43	.24	.06	2.46												
Youngstown	Lake Ontario	.15	.09	.41	.41	.41	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	1.64											
<i>Vermont.</i>																															
Burlington	Champlain	.06	.15	.16	.50	.21	.31	.49	.44	T.	.09	.09	.02	.18	.09	.02	.18	.09	.02	3.46											
Cornwall	do	.03	.04	.07	.14	.46	.25	.26	.05	T.	.09	.09	.02	.20	.20	.02	.20	.20	.02	2.57											
Enosburg Falls	do	.02	.02	.05	.05	.46	.37	.37	.36	T.	.09	.09	.02	.19	.58	.08	.07	.12	.16	.08	4.59										
Northfield	do	.02	.02	.05	.05	.30	.32	.53	.23	T.	.09	.09	.02	.10	.21	.06	.11	.05	.32	.25	2.53										
Wells	do	.78	.80	.32	.53	.23	.74	.16	T.	.09	.09	.02	.29	.T.	.09	.14	.24	.36	.26	4.51											

* Precipitation included in that of the next measurement.

† Separate dates of falls not recorded.

Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 3.—Maximum and minimum temperatures at selected stations for September, 1911. District No. 4, Lake Region.

Date.	Duluth, Minn.	Wisconsin.						Chicago, Ill.	Fort Wayne, Ind.	Michigan.																
		Florence.		Green Bay.		Milwaukee.				Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.		
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1...	72	55	81	56	88	59	80	63	80	59	79	58	76	48	74	59	76	60	78	55	88	54	89	54	83	55
2...	70	47	69	57	77	58	84	62	86	68	89	68	74	54	70	50	65	54	64	52	77	53	86	56	75	60
3...	63	44	67	41	72	52	70	60	70	65	75	57	67	48	69	34	64	47	62	49	70	47	75	47	72	47
4...	55	50	66	44	76	54	72	62	75	65	80	54	65	49	61	41	66	45	70	50	72	37	67	43	75	49
5...	58	52	65	53	77	58	82	58	83	67	76	51	68	56	55	46	56	52	57	53	59	55	65	58	75	55
6...	52	40	55	44	60	52	63	57	67	63	70	62	58	47	57	36	52	42	53	46	61	50	62	53	72	55
7...	49	43	54	41	56	52	65	58	72	64	80	61	55	48	52	33	54	44	55	43	58	44	57	49	76	56
8...	50	46	59	41	60	52	63	58	66	63	78	65	59	49	54	38	58	43	56	43	60	42	61	54	75	56
9...	67	45	71	51	70	52	69	58	68	64	79	62	65	53	59	40	64	50	69	54	68	50	67	51	78	58
10...	75	54	74	54	73	59	68	63	76	65	79	60	65	53	75	43	72	52	71	56	67	48	75	52	78	55
11...	74	42	77	56	79	58	82	62	82	62	84	61	72	49	75	44	70	46	80	48	71	46	77	53	81	61
12...	60	37	63	36	59	45	65	55	72	59	72	56	59	41	65	32	56	39	57	41	54	39	59	43	74	55
13...	57	47	63	39	64	50	64	54	66	58	65	52	59	47	67	35	62	47	62	46	59	39	54	43	66	47
14...	59	49	65	45	65	52	75	57	81	57	75	48	59	54	62	42	61	49	61	51	57	42	58	43	64	45
15...	77	53	75	52	77	57	79	64	79	78	68	80	56	63	41	76	58	81	56	75	51	81	57	77	62	75
16...	63	53	76	51	82	56	86	59	82	63	81	62	71	54	65	40	69	53	64	53	67	47	81	55	82	51
17...	67	51	75	50	78	57	73	62	75	68	82	56	71	55	77	51	76	53	70	47	65	53	84	51	75	48
18...	63	45	70	58	70	56	76	59	80	64	81	65	78	59	75	59	69	56	75	57	69	56	70	61	84	64
19...	65	44	65	43	69	48	72	54	67	58	71	55	69	48	63	42	60	48	65	49	57	45	70	48	55	52
20...	67	50	68	37	66	49	64	55	68	58	71	51	64	44	58	32	68	44	62	47	63	39	68	42	71	43
21...	65	50	63	50	66	53	66	57	69	60	68	53	62	51	70	40	61	50	60	52	63	48	61	48	64	51
22...	77	53	73	45	74	51	69	54	68	58	69	52	66	46	77	45	82	50	77	54	74	47	67	42	70	42
23...	65	42	76	56	74	58	75	56	77	60	80	50	67	49	74	43	74	43	78	45	73	52	54	47	72	54
24...	44	40	67	40	65	45	66	51	68	60	80	56	49	43	65	39	47	40	45	42	58	44	62	51	75	50
25...	54	40	55	37	52	44	57	50	62	58	72	61	53	41	54	39	50	42	49	50	53	43	54	45	66	58
26...	61	41	60	30	62	38	60	45	64	52	67	56	58	37	62	27	64	38	62	40	62	37	62	48	62	31
27...	57	42	63	42	71	44	76	53	77	63	75	59	66	39	58	29	58	34	62	38	57	36	68	39	72	54
28...	43	38	50	25	56	41	68	51	71	56	69	52	52	33	47	20	46	32	49	34	50	29	53	37	66	41
29...	45	37	48	42	54	43	66	47	71	51	71	50	51	43	47	41	46	43	47	42	44	39	51	45	69	52
30...	49	35	48	40	55	41	56	47	60	51	59	48	52	42	57	42	48	43	47	43	47	36	51	43	58	46
Mns..	60.8	45.5	65.1	45.2	68.2	51.1	70.4	56.4	72.8	61.2	75.5	57.4	63.8	48.2	63.9	39.5	62.3	46.5	63.2	47.9	62.3	14.7	65.9	48.4	73.8	52.9

Date.	Michigan.						Cleveland.	Ohio.						New York.						Vermont.								
	Detroit.		Muskegon.		Saginaw, West Side.			Lima.		Sandusky.		Toledo.		Erie, Pa.		Buffalo.		Canton.		Rochester.		Syracuse.		Burlington.		Northfield.		
	Max.	Min.	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1...	87	62	85	55	89	52	84	61	85	58	87	62	87	62	80	61	74	64	77	54	82	59	79	59	75	74	51	
2...	89	61	75	62	83	63	86	67	86	65	90	69	89	67	87	69	77	66	79	61	84	65	85	67	81	82	52	
3...	73	56	70	49	78	47	67	60	85	60	70	59	73	57	69	60	77	69	76	51	71	57	69	70	44	64	44	
4...	74	54	78	48	80	49	68	54	80	55	71	55	72	57	70	52	73	54	69	58	70	51	69	63	70	44	64	
5...	70	61	76	60	70	55	72	62	71	65	70	63	71	62	76	61	73	57	80	45	78	53	73	53	47	75	42	
6...	67	54	68	60	66	56	71	64	70	64	65	69	59	73	62	70	60	66	51	70	57	69	56	70	44	64	54	
7...	68	54	68	55	62	55	78	62	81	60	75	62	73	57	70	60	60	53	68	59	73	55	67	54	72	43	64	
8...	72	59	72	54	65	54	69	61	78	64	69	64	67	63	65	60	64	54	63	44	61	55	59	58	46	55	40	
9...	80	63	70	59	80	56	71	65	73	62	74	65	80	62	72	63	75	67	75	64	76	58	71	59	66	56	51	
10...	80	62	72	55	76	62	79	61	76	65	73	65	66	61	72	60	72	58	72	54	78	55	76	57	73	49	49	
11...	82	64	67	60	80	58	78	65	82	62	81	64	83	64	77	63	75	61	76	51	76	64	75	50	75	49	49	
12...	64	49	65	51	74	51	69	53	71	63	67	57	68	55	73	52	72	51	68	44	68	50	73	47	70	41	41	
13...	62	49	68	46	62	46	60	50	67	52	63	52	64	52	68	46	64											